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UNITED STATES DEPARTMENT OF AGRICULTURE  
FOREST SERVICE

Mike  
Srago

R-5

REPLY TO: 3430 Evaluation

November 30, 1978

SUBJECT: Biological Evaluation of Burgess & Harvey  
Timber Sales 4620 acres 5085 acres

TO: Forest Supervisor, Lassen N.F.



Enclosed is a biological evaluation recommending that all pine stumps on the Burgess and Harvey timber sales be treated with borax. This recommendation is based on the high percentage of infected stumps in the area as a result of previous logging (12.3%) and also the very high positive benefit/cost ratio determined by Ken Estes (3.7/1).

If there are any questions please contact Mike Srago in the Regional Office, phone 415-556-6864.

*W.L. Freeman*  
WILFRED L. FREEMAN, JR., Director  
Forest Insect and Disease Management

Enclosure.

## BIOLOGICAL EVALUATION

COPY

Fomes annosus root disease of Eastside Pine in the Burgess and Harvey Timber Sales

### INTRODUCTION

Fomes annosus root disease is a frequently encountered problem in the east side pine type of California. It is widespread in and economically damaging to the pine forests of north eastern and southern California. Since its original report in the 1930's by Olson just north of Westwood, new and frequent occurrences have been reported each year since.

### TECHNICAL INFORMATION

The causal agent of annosus root rot is Fomes annosus, a basidiomycetous fungus which kills and decays the roots of many coniferous forest trees. All western conifers are susceptible to attack by this fungus.

This fungus colonizes newly cut pine stumps and their roots and from here moves via root contact into the root systems of adjacent live trees. It moves through the roots of these live trees to the root crown where it girdles and kills the pine tree. Enlarging centers of F. annosus killed trees are formed as this fungus travels from tree to tree through their root systems. The fungus may remain viable in the old stumps and roots of infected trees for over 50 years in the east side pine and all newly established pines whose roots contact these old stumps may be killed. Thus, these areas may be nonproductive for over 50 years and the losses associated with F. annosus includes not only the original mortality but also the volume growth which would have resulted if the area encompassed by the center had been productive.

A survey of the stumps in the proposed sale areas indicate that 12.3% of the pine stumps have been infected in the past. A similar infection percentage of cut stumps can be expected in future timber sales. The benefit/cost ratio was calculated and the benefit of treatment was shown to be 3.7 times the cost of treatment, therefore it is recommended that all pine stumps be treated with borax on these two timber sales.